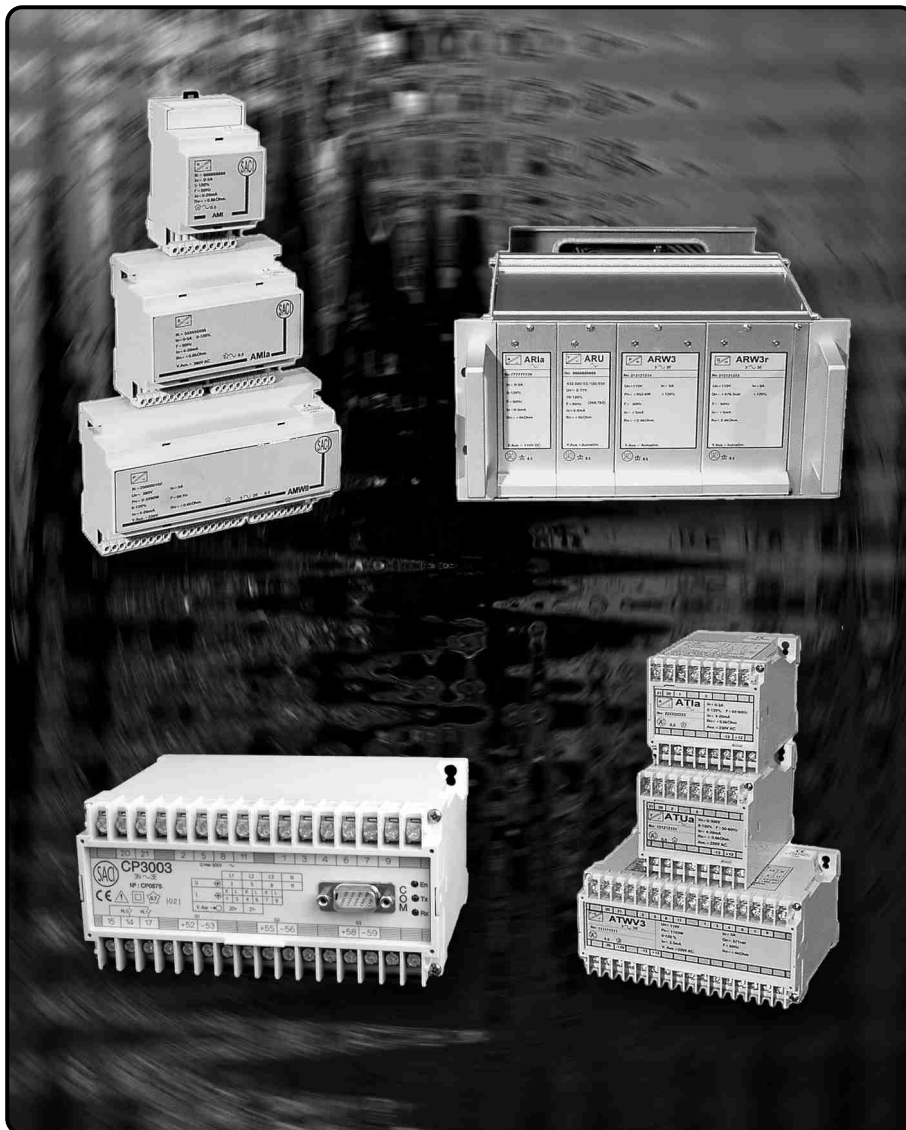


MEASURING TRANSDUCERS PROGRAMMABLE TRANSDUCERS



Transducers



MEASURING TRANSDUCERS

Measuring transducers

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PROGRAMMABLE MEASURING TRANSDUCER

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MEASURING TRANSDUCERS

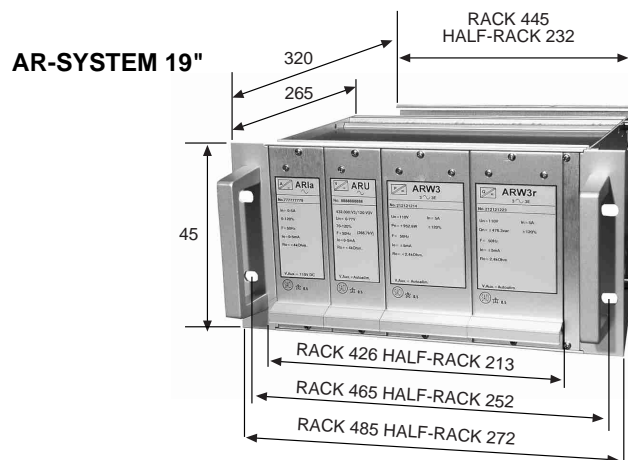
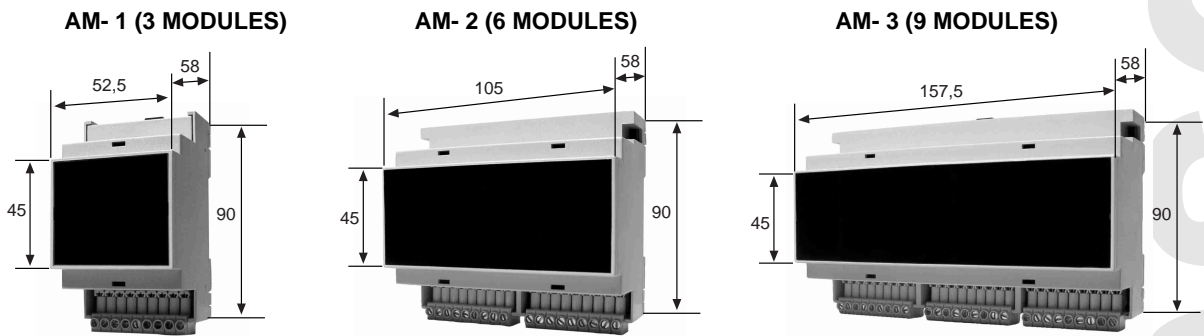
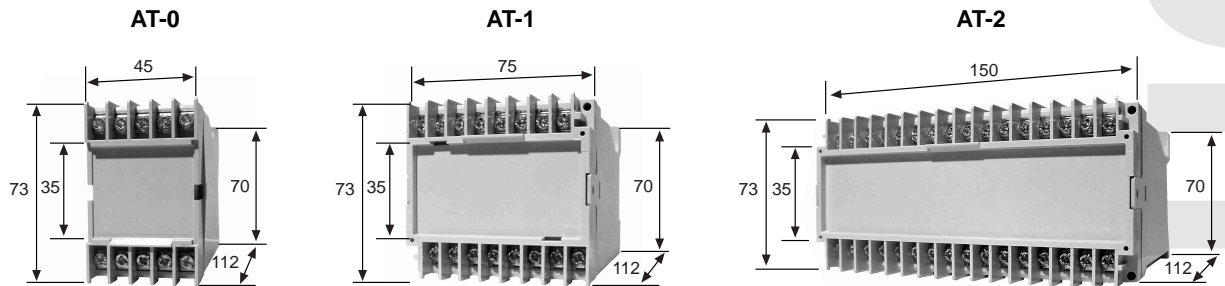
Measuring transducers

GENERAL FEATURES

All electrical and temperature parameters.
 Direct current.
 Alternating current.
 Temperature (°C).
 Resistance.

DIN casings: AT Series
 DIN RAIL casings: AM Series
 19" SYSTEM: AR Series

DIMENSIONS



MEASURING TRANSDUCERS

Measuring transducers

STANDARDS

EN 60688	Electrical measuring transducers.
IEC 255	Insulation test.
EN 60068	Environment and vibration test.
EN 60801	Electromagnetic compatibility.
IEC 1000	Electromagnetic compatibility.
EN 61010	Safety requirements.
EN 61036	Static meters for active energy, classes 1 and 2.
EN 61268	Static meters for reactive energy, classes 2 and 3.
EN 60529	Casing protection class (IP Code).
EN 50081	Electromagnetic compatibility - Emission.
EN 50082	Electromagnetic compatibility - Immunity.
DIN 43864	Pulse interface.
UL 94	Flammability test.
IEC 38	Standard voltage and current values.
IEC 664	Insulation coordination.

GENERAL TECHNICAL SPECIFICATIONS

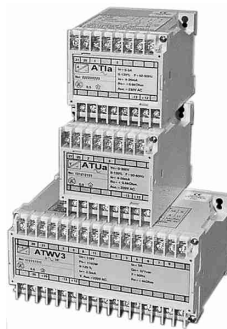
Insulation	3,7 kV, 50 Hz, 1 min. Double insulation Installation category III Pollution degree 2
Impulse voltage strength	5 kV, 1,2/50 μ s.
High frequency disturbances (HF)	2,5 kV, 1 MHz.
Overloads	Current input 2 In continuously 20 In, 3 s. 40 In, 1 s.
	Voltage input 1.2 Vn continuously 2 Vn, 10 s.
Accuracy	0,5 – 0,2
Reference temperature	23 °C \pm 1 °C
Temperature coefficient	\leq 0.003 % / C
Operating temperature	-10 °C to +55 C
Storage temperature:	-30 °C to +70 C
Linearity error	\leq 0,1 %
Ripple (peak to peak)	\leq 0,3 %
Response time	\leq 200 ms (0-90 %Io).
Operating frequency	50, 60 and 400 Hz
Variation with frequency	
50-60 Hz	A,W not affected
50-60 Hz (with Hilftension)	V not affected
50-60 Hz	V 0,1 %/Hz
50-60 Hz	Var, cos φ 1 %/Hz

MEASURING TRANSDUCERS

Measuring transducers



AM



AT



AR

ORDERING INFORMATION

1.- Type of measuring transducer: AT..., or AM..., or AR...

- For example:
- a) AT1
 - b) AMW
 - c) ARUa3

2.- Input range of the measuring parameter (A, V, Hz, W, Var, ϕ , Wh, Varh, Ω , $^{\circ}\text{C}$).

- For example:
- a) 0-5 A
 - b) 45-55 Hz
 - c) 10 kW

3.- Current output or Voltage output (mA or V).

- For example:
- a) 0-5 mA
 - b) 4-20 mA
 - c) 10 V

The two last data define the Transfer curves (see page MT19).

4.- Auxiliary voltage: AC. or DC. (if required)

5.- Data

Measuring transducers for frequency:
 Measuring transducers for active power:
 Measuring transducers for phase angle:
 Integrator transducers (I/F):
 Measuring transducers for energy:

Rated voltage.
 Rated current and rated voltage between phases.
 Rated current and rated voltage between phases.
 Number of output pulses per kWh.
 Rated current and rated voltage between phases and number of output pulses per kWh.



MEASURING TRANSDUCERS

Measuring transducers

INPUTS (*)

TYPE 1 -	Alternating current (AC.) In Burden (per circuit)	5 A or 1 A 1.5 VA (Self supplied)
TYPE 2 -	Alternating voltage (AC.) Vn Burden (per circuit)	100, 110, 115, 230, 400 or 440 V (Vn1mA) VA 1.5 VA (Self supplied voltage and frequency transducers)
TYPE 3 -	Direct current (DC.) In Burden (per circuit)	100 μ A \div 5 A In 60 mV
TYPE 4 -	Direct voltage (DC.) Vn Burden (per circuit)	10 mV \div 440 V Vn 1 mA
TYPE 5 -	Frequency (Hz) Fn	50, 60 or 400 Hz

OUTPUTS (*)

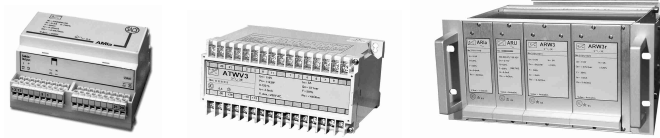
TYPE 1 -	Current output (DC.) Io Load resistance Saturation limit	1, 5, 10 or 20 mA $R_o (k\Omega) = 12 V / I_o (mA)$ 2 Io
TYPE 2 -	Current output (DC.) Io (auxiliary voltage required) Load resistance Saturation limit	4-20 mA $R_o (k\Omega) = 12 V / I_o (mA)$ 2 Io
TYPE 3 -	Voltage output Vo (auxiliary voltage required) Load resistance Saturation limit Max. open circuit voltage	1, 5 or 10 V 1-5 or 2-10 V $R_o (k\Omega) = V_o / 10 mA$ 2 Vo 30 V
TYPE 4 -	Pulse output Type Frequency Pulse length DC. voltage Maximum current	Optocoupler Normally open (NO) Voltage free 200 \div 6000 Imp./h 200 \div 300 ms 5 \div 48 V (Max. 80 V) 50 mA

AUXILIARY VOLTAGES (*)

TYPE 1 -	AC. auxiliary voltage Vaux Burden	115, 230, 400 or 440V \pm 20% See model.
TYPE 2 -	DC. auxiliary voltage Vaux Burden	12, 24, 48, 110 or 220 V \pm 20 % See model.

MEASURING TRANSDUCERS

Measuring transducers



ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% In	(I/O) Transfer	Diagram	THD In
	I	O	Aux. V						
ATI	1	1	-	AT-1	Self supplied	5-120%	A	Nr. 01	< 0,5%
AMI	1	1	-	AM-1	Self supplied	5-120%	A	Nr. 01	< 0,5%
ARI	1	1	-	8d	Self supplied	5-120%	A	Nr. 01	< 0,5%
ATiz	1	1	-	AT-1	Self supplied	0-120%	A	Nr. 01	< 0,5%
ARiz	1	1	-	8d	Self supplied	0-120%	A	Nr. 01	< 0,5%
ATI3 (Triple)	1	1	-	AT-2	Self supplied	5-120%	A	Nr. 06	< 0,5%
ATiz3 (Triple)	1	1	-	AT-2	Self supplied	0-120%	A	Nr. 06	< 0,5%
ARiz3 (Triple)	1	1	-	AT-2	Self supplied	0-120%	A	Nr. 06	< 0,5%
ATia	1	1-2-3	1-2	AT-1	1,5VA/1,5W	0-120%	A,B,G,K	Nr. 02	< 0,5%
AMia	1	1-2-3	1-2	AM-2	1,5VA/1,5W	0-120%	A,B,G,K	Nr. 02	< 0,5%
ARia	1	1-2-3	1-2	8d	1,5VA/1,5W	0-120%	A,B,G,K	Nr. 02	< 0,5%
ATIa3 (Triple)	1	1-2-3	1-2	AT-2	4,5VA/4,5W	0-120%	A,B,G,K	Nr. 03	< 0,5%
ARia3 (Triple)	1	1-2-3	1-2	12d	4,5VA/4,5W	0-120%	A,B,G,K	Nr. 03	< 0,5%
ATle (RMS)	1	1-2-3	1-2	AT-2	2VA/2W	0-120%	A,B,G,K	Nr. 02	(**)
AMle (RMS)	1	1-2-3	1-2	AM-2	2VA/2W	0-120%	A,B,G,K	Nr. 02	(**)

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

ALTERNATING VOLTAGE

MODEL	TYPES (*)			Dimens.	Aux. voltage	% In	(I/O) Transfer	Diagram	THD In
	I	O	Aux. V						
ATU	2	1	-	AT-1	Self supplied	40-120%	A	Nr. 05	< 0,5%
AMU	2	1	-	AM-1	Self supplied	40-120%	A	Nr. 05	< 0,5%
ARU	2	1	-	8d	Self supplied	40-120%	A	Nr. 05	< 0,5%
ATU3 (Triple)	2	1	-	AT-2	Self supplied	40-120%	A	Nr. 09	< 0,5%
ARU3 (Triple)	2	1	-	12d	Self supplied	40-120%	A	Nr. 09	< 0,5%
ATUa	2	1-2-3	1-2	AT-1	1,5VA/1,5W	0-120%	A,B,G,K	Nr. 04	< 0,5%
AMUa	2	1-2-3	1-2	AM-2	1,5VA/1,5W	0-120%	A,B,G,K	Nr. 04	< 0,5%
ARUa	2	1-2-3	1-2	8d	1,5VA/1,5W	0-120%	A,B,G,K	Nr. 04	< 0,5%
ATUa3 (Triple)	2	1-2-3	1-2	AT-2	4,5VA/4,5W	0-120%	A,B,G,K	Nr. 12	< 0,5%
ARUa3 (Triple)	2	1-2-3	1-2	12d	4,5VA/4,5W	0-120%	A,B,G,K	Nr. 12	< 0,5%
ATUe (RMS)	2	1-2-3	1-2	AT-2	2VA/2W	0-120%	A,B,G,K	Nr. 04	(**)
AMUe (RMS)	2	1-2-3	1-2	AM-2	2VA/2W	0-120%	A,B,G,K	Nr. 04	(**)
ATUVn	2	1	-	AT-1	Self supplied	0±120%	G	Nr. 05	< 0,5%

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

FREQUENCY

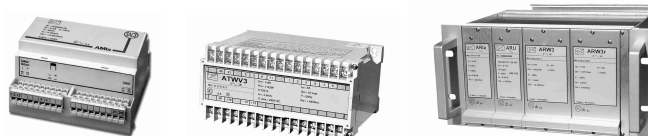
MODEL	TYPES (*)			Dimens.	% Vn	Aux. Voltage	% In	(I/O) Transfer	Diagram	THD In
	I	O	Aux. V							
ATF	2&5	1-2-3	-	AT-1						
AMF	2&5	1-2-3	-	AM-1	80÷120%	Self supplied	90÷110%	G, H	Nr. 05	< 20%
ARF	2&5	1-2-3	-	8d						
ATFa	2&5	1-2-3	1-2	AT-1						
AMFa	2&5	1-2-3	1	AM-1	10÷120%	3VA/3W	10÷120%	A,G, H	FnNr. 04	(**)
ARFa	2&5	1-2-3	1-2	8d						

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

(**) Not affected by THD

MEASURING TRANSDUCERS

Measuring transducers



ACTIVE POWER

SINGLE-PHASE, ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% Pn	(I/O) Transfer	Diagram	THD Vn In
	I	O	Aux. V						
ATW	1&2	1-2-3	1-2	AT-2	3VA/3W	0-144%	A,B,C, D, E, F,K	Nr. 07	< 20%
AMW	1&2	1-2-3	1	AM-3					
ARW	1&2	1-2-3	1-2	12d					

BALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% Pn	(I/O) Transfer	Diagram	THD Vn In
	I	O	Aux. V						
ATWI – 3 Wire	1&2	1-2-3	1-2	AT-2	3VA/3W	0-144%	A,B,C, D, E, F,K	Nr. 17	< 20%
AMWI – 3 Wire	1&2	1-2-3	1	AM-3					
ARWI – 3 Wire	1&2	1-2-3	1-2	12d					
ATWIn – 4 Wire	1&2	1-2-3	1-2	AT-2	3VA/3W	0-144%	A,B,C, D, E, F,K	Nr. 14	< 20%
AMWIn – 4 Wire	1&2	1-2-3	1	AM-3					
ARWIn – 4 Wire	1&2	1-2-3	1-2	12d				Nr. 17	

UNBALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% Pn	(I/O) Transfer	Diagram	THD Vn In
	I	O	Aux. V						
ATWII – Wire	1&2	1-2-3	1-2	AT-2	3,5VA/3,5W	0-144%	A,B,C, D, E, F,K	Nr. 18	< 20%
AMWII – 3 Wire	1&2	1-2-3	1	AM-3					
ARWII – 3 Wire	1&2	1-2-3	1-2	12d					
ATW3 – 4 Wire	1&2	1-2-3	1-2	AT-2	3,5VA/3,5W	0-144%	A,B,C, D, E, F,K	Nr. 15	< 20%
AMW3 – 4 Wire	1&2	1-2-3	1	AM-3					
ARW3 – 4 Wire	1&2	1-2-3	1-2	12d					

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

REACTIVE POWER

SINGLE-PHASE, ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% Pn	(I/O) Transfer	Diagram	THD Vn In
	I	O	Aux. V						
ATWr	1&2	1-2-3	1-2	AT-2	3VA/3W	0-144 %	A,B,C, D, E, F,K	Nr. 07	< 0,5%
AMWr	1&2	1-2-3	1	AM-3					
ARWr	1&2	1-2-3	1-2	12d					

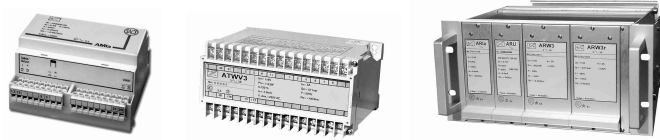
BALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% Pn	(I/O) Transfer	Diagram	THD Vn In
	I	O	Aux. V						
ATWIr – 3 Wire	1&2	1-2-3	1-2	AT-2	3VA/3W	0-144 %	A,B,C, D, E, F,K	Nr. 17	< 0,5%
AMWIr – 3 Wire	1&2	1-2-3	1	AM-3					
ARWIr – 3 Wire	1&2	1-2-3	1-2	12d					
ATWInr – 4 Wire	1&2	1-2-3	1-2	AT-2	3VA/3W	0-144 %	A,B,C, D, E, F,K	Nr. 14	< 0,5%
AMWInr – 4 Wire	1&2	1-2-3	1	AM-3					
ARWInr – 4 Wire	1&2	1-2-3	1-2	12d				Nr. 17	

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

MEASURING TRANSDUCERS

Measuring transducers



REACTIVE POWER

UNBALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% Qn	(I/O) Transfer.	Diagram	THD Vn In
	I	O	Aux. V						
ATWIIr – 3 Wire	1&2	1-2-3	1-2	AT-2	3,5VA/3,5W	0-144%	A,B,C, D, E, F,K	Nr. 18	< 0,5%
AMWIIr – 3 Wire	1&2	1-2-3	1	AM-3					
ARWIIr – 3 Wire	1&2	1-2-3	1-2	12d					
ATW3r – 4 Wire	1&2	1-2-3	1-2	AT-2	3,5VA/3,5W	0-144%	A,B,C, D, E, F,K	Nr. 15	< 0,5%
AMW3r – 4 Wire	1&2	1-2-3	1	AM-3					
ARW3r – 4 Wire	1&2	1-2-3	1-2	12d					

(*) I: Input; O: Output; Aux. V.: Auxiliary voltage (See page CM6)

COMBINED MEASURING TRANSDUCERS FOR ACTIVE AND REACTIVE POWER

Insulation between outputs, 5 kV, 50 Hz, 1 min.

SINGLE-PHASE, ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% Pn % Qn	(I/O) Transfer.	Diagram	THD Vn In
	I	O	Aux. V ^(*)						
ATWV	1&2	1-2-3	1-2	AT-2	4VA/4W	0-144 %	A,B,C,D	Nr. 08	Pn 20% Qn < 0,5%

(*) 220 V DC. not possible.

BALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% Pn % Qn	(I/O) Transfer.	Diagram	THD Vn In
	I	O	Aux. V						
ATWVI – 3 Wire	1&2	1-2-3	1-2	AT-2	4VA/4W	0-144 %	A,B,C, D	Nr. 27	Pn < 20% Qn < 0,5%
ATWVIIn – 4 Wire	1&2	1-2-3	1-2	AT-2	4VA/4W	0-144 %	A,B,C, D	Nr. 13	Pn < 20% Qn < 0,5%

UNBALANCED THREE-PHASE, ALTERNATING CURRENT

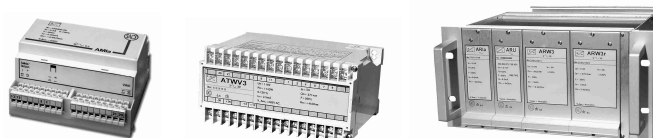
MODEL	TYPES (*)			Dimens.	Aux. voltage	% Pn % Qn	(I/O) Transfer.	Diagram	THD Vn In
	I	O	Aux. V						
ATWVII – 3 Wire	1&2	1-2-3	1-2	AT-2	4VA/4W	0-144 %	A,B,C, D	Nr. 24	Pn < 20% Qn < 0,5%
ATWV3 – 4 Wire	1&2	1-2-3	1	AT-2	4VA/4W	0-144 %	A,B,C, D	Nr.21	Pn < 20% Qn < 0,5%

(*) I: Input; O: Output; Aux. V.: Auxiliary voltage (See page CM6)

COMBINED MEASURING TRANSDUCERS FOR POWER + ENERGY
See PROGRAMMABLE MEASURING TRANSDUCER, CP2000 MODEL

MEASURING TRANSDUCERS

Measuring transducers



DIRECT CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% In	(I/O) Transfer	Diagram
	I	O	Aux. V.					
AT1ca	3	1-2-3	1-2	AT-1	4VA/4W	0-120 %	A, B, C, D, E, F, G, K	Nr. 11
AR1ca	3	1-2-3	1	8d				
AT1ca(a)	3	1-2-3	2	AT-0				

(a) With potentiometer to set zero and full scale $\pm 10\%$

DIRECT VOLTAGE

MODEL	TYPES (*)			Dimens.	Aux. voltage	% Vn	(I/O) Transfer	Diagram
	I	O	Aux. V.					
ATUca	4	1-2-3	1-2	AT-1	4VA/4W	0-120 %	A, B, C, D, E, F, G, K	Nr. 10
ARUca	4	1-2-3	1	8d				
ATUca (a)	4	1-2-3	2	AT-0				

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

(a) With potentiometer to set zero and full scale $\pm 10\%$

PHASE ANGLE

SINGLE-PHASE, ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% •	(I/O) Transfer	Diagram	THD Vn In
	I	O	Aux. V.						
ATA	1&2	1-2-3	1-2	AT-2	3VA/3W	60-0-60	C, D, F	Nr. 07	< 20%
AMA	1&2	1-2-3	1	AM-3		ó			
ARA	1&2	1-2-3	1-2	8d		-90-0-90			

BALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	TYPES (*)			Dimens.	Aux. voltage	% •	(I/O) Transfer	Diagram	THD Vn In
	I	O	Aux. V.						
ATAI	1&2	1-2-3	1-2	AT-2	3VA/3W	60-0-60	C, D, F	Nr. 22	< 20%
AMAI	1&2	1-2-3	1	AM-3		ó			
ARAI	1&2	1-2-3	1-2	8d		-90-0-90			

PHASE ANGLE BETWEEN VOLTAGES

MODEL	TYPES (*)			Dimens.	Aux. voltage	% •	(I/O) Transfer	Diagram	THD Vn
	I	O	Aux. V.						
ATAU	2	1-2-3	1	AT-2	3VA/3W	180-0-180	C, D, F	Nr. 23	20%
ARAU	2	1-2-3	1	8d					

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

ALTERNATING CURRENT. BIDIRECTIONAL CURRENT (R.M.S.).

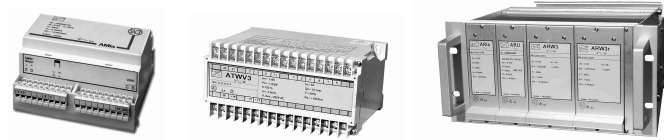
MODEL	TYPES (*)			Dimens.	Aux. voltage	% In	(I/O) Transfer	Diagram	THD In
	I	O	Aux. V.						
ATIB, Single-phase	1&2	1-2-3	1	AT-2	3VA/3W	0-120%	C, D, F	Nr. 07	(**)
ATIBI, Balanced three-phase	1&2	1-2-3	1	AT-2	3VA/3W	0-120%	C, D, F	Nr. 17	(**)

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

(**) Not affected by THD.

MEASURING TRANSDUCERS

Measuring transducers



RESISTANCE (0-100; 0-3000 Ω)

MODEL	TYPES (*)			Dimensions	Aux. voltage	% Rn	(I/O) Transfer.	Diagram
	I	O	Aux. V.					
ATS2	100%	1-2-3	1-2	AT-1	2VA/2W	A,B, G,K	0-100; 0-300 Ohm	Nr. 25
ARS2	100%	1-2-3	1-2	8d				

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

Measuring transducers for resistance + external RS1 module:
Transformer socket measurement. Connection diagram No. 26

TEMPERATURE SENSOR PT100 (0-100; 0-600 °C)

MODEL	TYPES (*)			Dimensions	Aux. voltage	% Rn	(I/O) Transfer.	Diagram
	I	O	Aux. V.					
ATS1	100%	1-2-3	1-2	AT-1	2VA/2W	0-100 %	A,B,D, F,G,K	Nr. 25
ARS1	100%	1-2-3	1-2	8d				
ARS1A (**)	100%	1-2-3	1-2	8d				
ARS3 (Triple)	100%	1-2-3	1-2	8d				

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

(**) With 1 alarm contact

CURRENT / FREQUENCY (I/F) TRANSDUCERS

Input: Direct current (single or bidirectional).

Output: Pulses.

Number of outputs: 1 or 2 (single or bidirectional input).

Insulation: Optocoupler.

Option: Relay output.

No. OF INPUTS: 1 (mA DC.)

MODEL	TYPES (*)			Dimensions	Aux. voltage	% Rn	(I/O) Transfer.	Diagram
	I	O	Aux. V.					
A TEC	S1-S2	4	1	AT-2	3VA/3W	0-120%	A, C, G	Nr. 16
A REC	S1-S2	4	1	8d				

No. OF INPUTS: 2 (mA DC.)

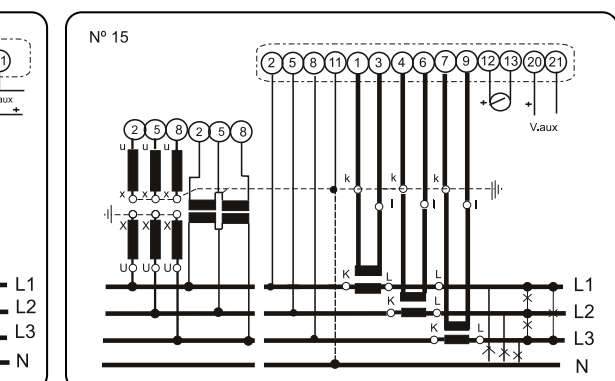
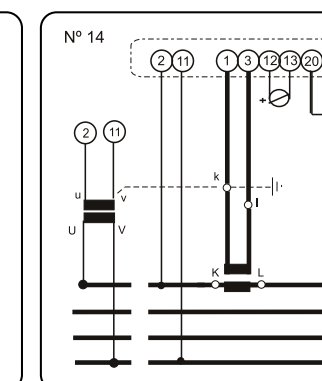
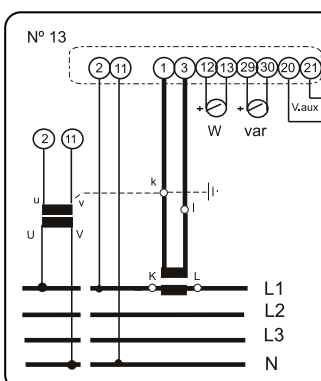
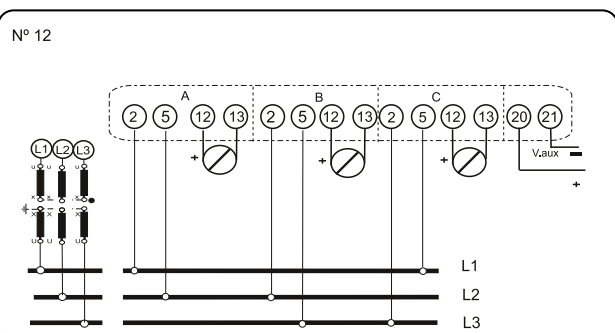
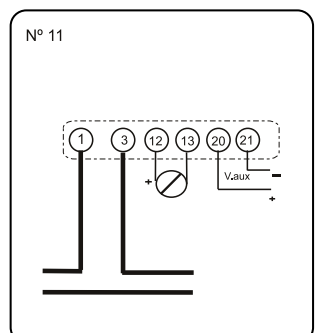
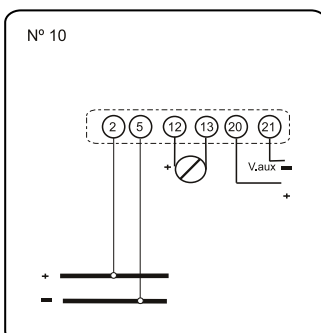
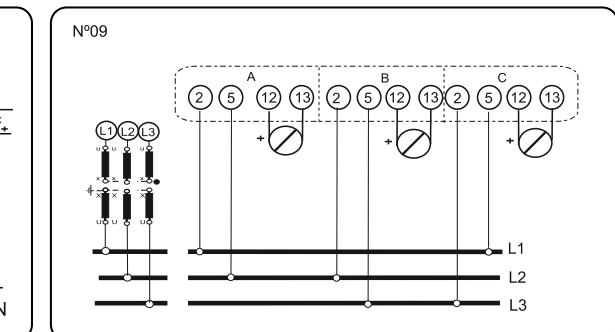
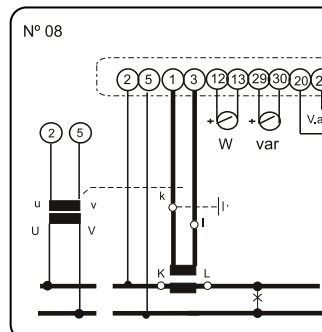
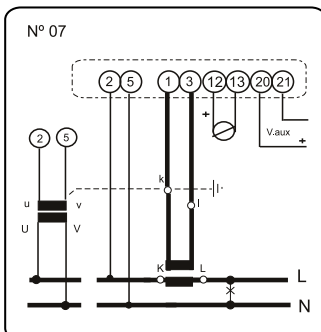
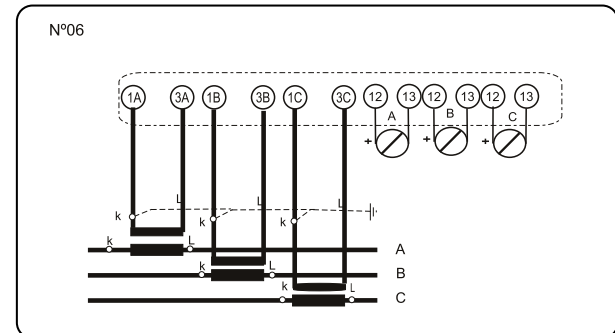
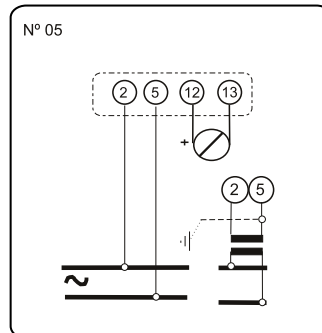
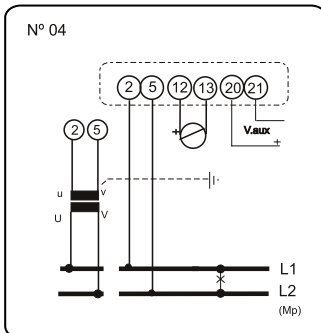
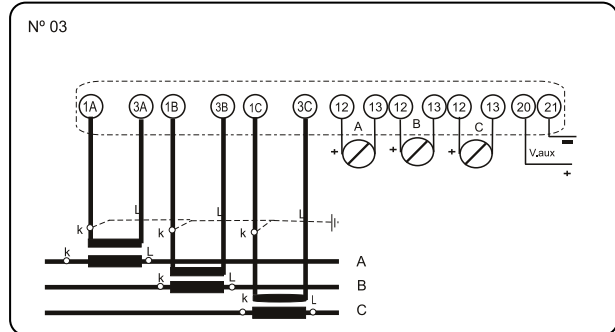
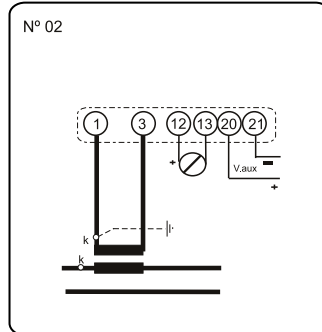
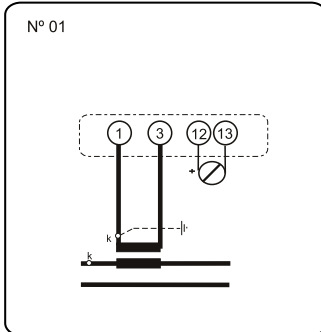
MODEL	TYPES (*)			Dimensions	Aux. voltage	% Rn	(I/O) Transfer.	Diagram
	I	O	Aux. V.					
A TECV	S1-S2	4	1	AT-2	3VA/3W	0-120%	A, C, G	Nr. 20
A RECV	S1-S2	4	1	8d				

(*) I: Input; O: Output; Aux. V.; Auxiliary voltage (See page CM6)

MEASURING TRANSDUCCERS

Measuring transducers

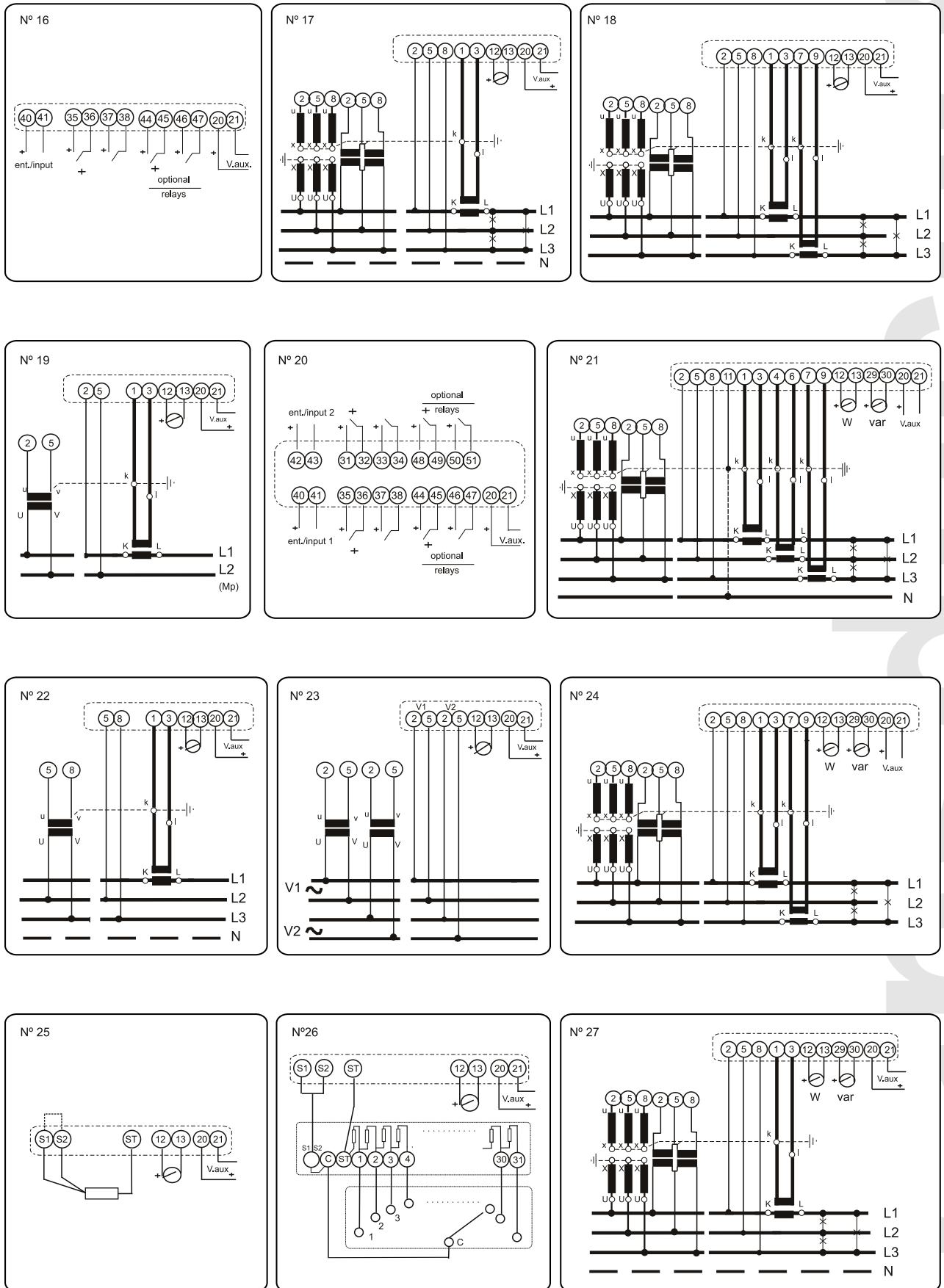
CONNECTION DIAGRAMS



MEASURING TRANSDUCE

Measuring transducers

CONNECTION DIAGRAMS



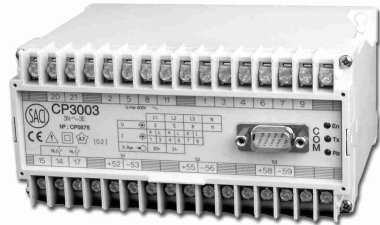
MEASURING TRANSDUCERS

Measuring transducers

PROGRAMMABLE MEASURING TRANSDUCERS - CLASS 0.2

PRODUCT DESCRIPTION

Measuring transducer controlled by a 16-bit microprocessor.
 Settable through software.
 Two, three or four analogue outputs.
 Two outputs with contacts (settable as energy pulses, alarm or programmable contacts).
 RS-485 or RS-232 serial port.



MEASURING PARAMETER	
Line-to-neutral voltage	Sen ϕ per phase and total
Line-to-line voltage	Frequency
Current (true effective value)	Active energy +
Active power, per phase and total	Active energy -
Reactive power, per phase and total	Inductive reactive energy
Apparent power, per phase and total	Capacitive reactive energy
Cos ϕ per phase and total	THD Current and Voltage

ANALOGUE OUTPUTS

Selectable measuring parameter for each analogue output.
 Programmable zero and full scale in the output range.
 Rated values of full scale 1, 5 and 20 mA DC. and 1, 5 and 10 V DC., mono or bidirectional.
 Insulation by optocoupler.

DIGITAL OUTPUTS

Two relay outputs (10 A, 30 V DC. / 250 V AC.).
 Programmable as:

- Active or reactive energy pulses.
- Maximum or minimum alarm signalling for any of the parameters measured.
- Output contacts (operated from the central unit).

SERIAL PORT

RS-232 or RS-485 type, bidirectional:

- Reading only: Electrical parameters and data.
- Writing only; Program data, reset and activating of output contacts.

2 or 4 wire direct to the device.
 MODBUS / JBUS communication protocol.
 Insulation by optocoupler.

SETTING

Via serial port:

- Baud rate: default 9600 bauds.
- Address: 0-255.
- Primary current.
- Primary voltage.
- Analogue outputs: Measuring parameter, zero and full scale.
- Digital outputs, settable as:
 - 1.- Energy pulses: Active or reactive energy constant.
 - 2.- Alarm: Measuring parameter, value and alarm mode (max. or min.).
 - 3.- Output contacts operated from the computer.

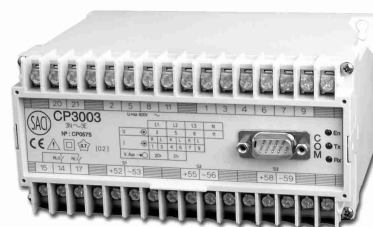
MEASURING TRANSDUCERS

Measuring transducers

TECHNICAL SPECIFICATIONS

ACCURACY 0.2

Inputs		
Alternating current (AC.)	5 A or 1 A (.../5 or .../1 A)	
Measuring range	0-120 %	
Alternating voltage (AC.)	100, 110, 230, 400 or 440 V	
Analogue outputs		
	1, 5, 10, 20 or 4-20 mA	
	1, 5, 10, 1-5 or 2-10 V	
Load impedance	Ro (kohm) = 12 V / Io (mA) Max.	
	Ro (kohm) = Vo / 30 mA Min.	
Saturation limit	1,2 Io – 1,2 Vo	
Auxiliary voltage	(See page CM17)	
Digital outputs	2 Relays	
Serial port	RS-232 or RS-485	
Protocol	JBUS/MODBUS	
Baud rate	Selectable, 300 - 19200 bauds	
Operating frequency	50 and 60 Hz	
Reference temperature	23 °C ±1°C	
Temperature coefficient	≤0,003 %/C	
Operating temperature	-10 °C to +55 °C	
Linearity error	≤0,05 %	
Ripple ≤0,1 %		
Response time	≤200 ms (0-90 % Io)	
Frequency coefficient	not affected	



MODELS

CP2000 - 2 Analogue outputs

	System	Diagrams
CP2000	SINGLE-PHASE BALANCED THREE-PHASE UNBALANCED THREE-PHASE, 3 WIRE UNBALANCED THREE-PHASE, 4 WIRE	No. 28
CP2001		No. 29 or no. 30
CP2002		No. 31
CP2003		No. 32

Outputs: No. 35

CP3000 - 3 Analogue outputs

	System	Diagrams
CP3000	SINGLE-PHASE BALANCED THREE-PHASE UNBALANCED THREE-PHASE, 3 WIRE UNBALANCED THREE-PHASE, 4 WIRE	No. 28
CP3001		No. 29 or No. 30
CP3002		No. 31
CP3003		No. 32

Outputs: No. 35

CP4000 - 4 Analogue outputs

	System	Diagrams
CP4000	SINGLE-PHASE BALANCED THREE-PHASE UNBALANCED THREE-PHASE, 3 WIRE UNBALANCED THREE-PHASE, 4 WIRE	No. 28
CP4001		No. 29 or No. 30
CP4002		No. 31
CP4003		No. 32

Outputs: No. 35

MEASURING TRANSDUCERS

Measuring transducers

CP2000

Auxiliary voltage, UNIVERSAL AC.-DC.	85...264 V A.C. 90...300 V D.C.
AC. auxiliary voltage	
Vaux	110 or 230 V $\pm 20\%$
Burden	4VA/4W
DC. auxiliary voltage	
Vaux	18...72 V
Without insulation between serial port and analogue output S2	
Energy measuring	Only in the digital outputs (relays)
Maximum open circuit voltage	30 V
THD harmonic distortion	not included

CP3000 - CP4000

Auxiliary voltage, UNIVERSAL AC. - DC.	85...264 V A.C. 90...300 V D.C.
AC. auxiliary voltage	
Vaux	110, 125 or 230 V $\pm 20\%$
Burden	5VA/5W (CP3000) 6VA/6W (CP4000)
DC. auxiliary voltage	
Vaux	18...72, 24 or 48 V DC.
Burden	5W (CP3000) 6W (CP4000)
Energy measuring	Digital outputs (relays) Serial port (option)
Maximum open circuit voltage	15 V
Double line, CP3000 series	RS232-RS485 (optional)

OPTIONAL

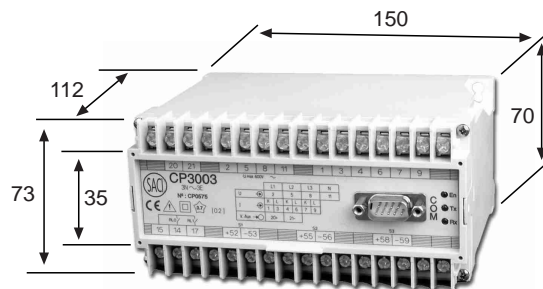
Setting and reading software.
Management software - SACIGEST.

ORDERING INFORMATION

- 1.- Type of transducer.
For example: a) CP2001
 b) CP3003
 c) CP4002
- 2.- Secondary rated voltage and current.
- 3.- Auxiliary voltage.
- 4.- Analogue outputs, mA (1, 5, 20) or V (1, 5, 10).
- 5.- RS-485 or RS-232 serial port.

SETTING DATA

- 1.- Primary rated voltage and current.
- 2.- Analogue output range.
- 3.- Transfer curves (page CM.19).
- 4.- Digital outputs type: Energy pulses (incl. energy constant), alarm mode or free contacts.
- 5.- Serial port: Baud rate



DIMENSIONS, CP2000 - CP3000 - CP4000

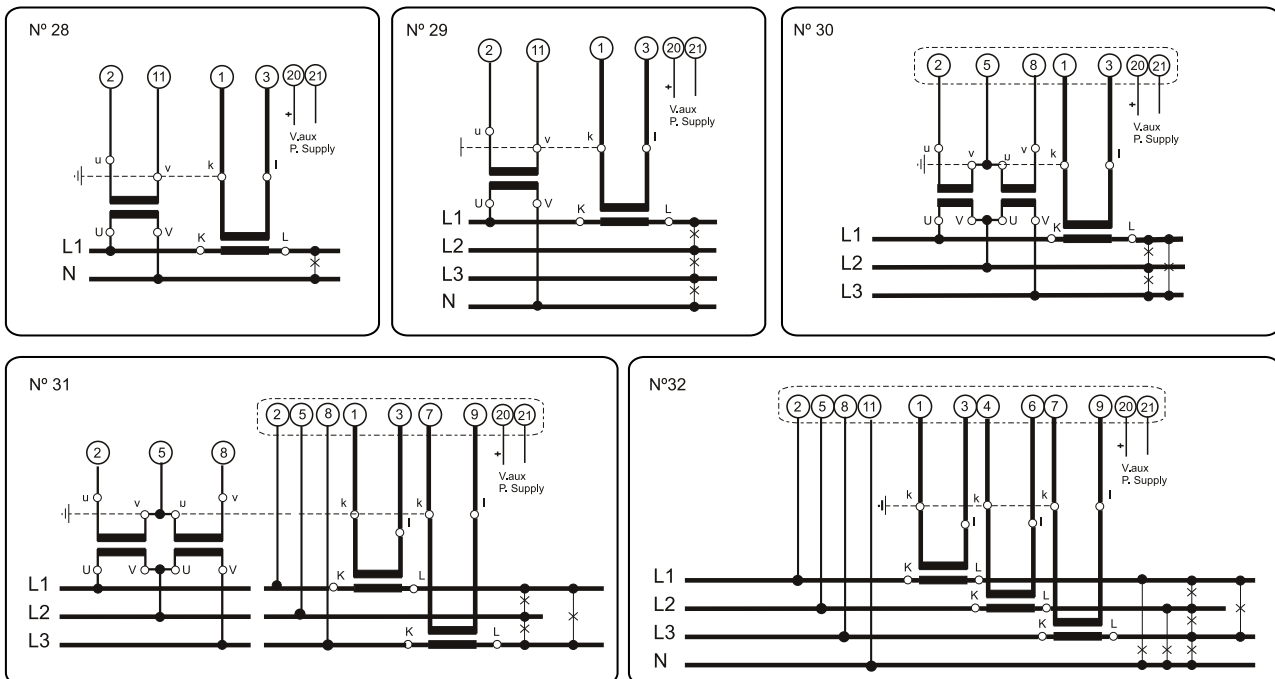
MEASURING TRANSDUCERS

Measuring transducers

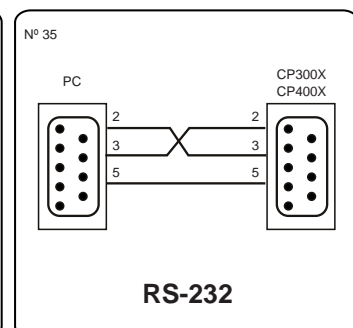
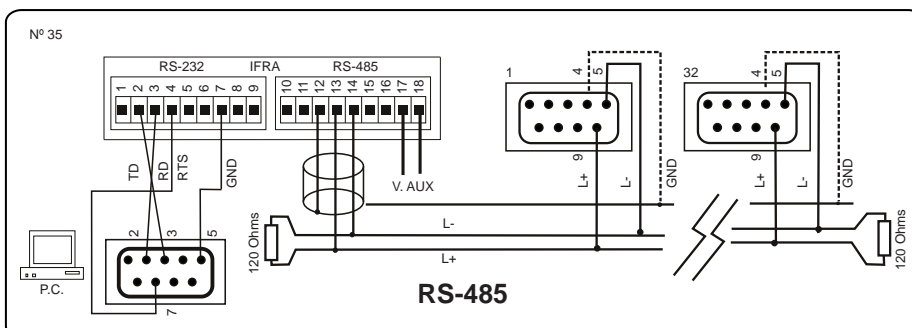
ACCESSORIES

- IFR1 RS485/232 Converter.
- IFRA RS485/232 Converter with galvanic separation.
- IFR4 4RS485/1RS232 Converter.
- C01 RS232-DB9 power cable (2m).
- C02 RS485-IFRA power cable (2m).
- C03 IFRA-DB9(PC) power cable (2m).
- SF2 WINDOWS-Programming software CP2000.
- SF3 WINDOWS-Programming software CP3000.
- SF4 WINDOWS-Programming software CP4000.

CONNECTION DIAGRAMS



N° 35		OUTPUT TERMINALS								
MODEL		CP2000			CP3000			CP4000		
RS485		GND 38	L+ 39	L- 40	YES			YES		
		15-14			15-14			15-14		
		15-17			15-17			15-17		
ANALOGUE OUTPUT		+	-		+	V	-	+	mA	-
	S1	52	53		52	54	53	52	53	
	S2	55	56		55	57	56	55	56	
	S3				58	60	59			
	S4							61	62	



MEASURING TRANSDUCERS

Measuring transducers

TRANSFER CURVES

